

Support System

Field Of The Invention

- 5 The present invention relates to a support system.

Background Of The Invention

10 Window boxes are in common use throughout the world for people living in apartments. The window box provides an occupant of an apartment with the opportunity to grow plants particularly flowers or vegetables in a box which is supported outside of the apartment on a windowsill or balustrade. The expression "window box" throughout this
15 specification is intended to denote a box or receptacle which can be supported on any structure such as a wall, windowsill, balustrade or rail.

20 The typical window box is in the form of a rectangular box made from a variety of materials such as plastics materials, corrosion resistant metals and alloys, and earthenware. Various methods have been employed for attaching the window box to a structure. This includes use of mechanical fasteners such as screws and bolts, and
25 brackets which are fastened to both the window box and the structure to which the window box is to be attached.

The present invention has its genesis in the consideration of alternate ways for fixing of a window box to a window.
30 However embodiments of the resulting invention are not limited to use for a window box, but can be applied to other devices and apparatus, such as but not limited to, tables and clothes lines.

Summary Of The Invention

According to the present invention there is provided a support system comprising:

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a structure for bearing a load;

at least one first engagement mechanism integrally formed with said structure; and,

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a first arm for each of said first engagement mechanisms, each first arm having a proximal end engaged in a respective first engagement mechanism and an opposite distal end shaped to hook over a support whereby said
15 structure is supported on said support by hooking said distal end of said arm over said support.

Preferably each of said first arms is adjustably engaged by a respective one of said first engagement mechanisms
20 whereby said distal end of said first arm can be positioned at one of a plurality of distances from said structure.

Preferably said support system further comprises a first
25 releasable locking mechanism which releasably locks said distal end of said first arm at one of a plurality of said distances from said structure.

Preferably said releasable locking mechanism comprises a
30 plurality of ratchet teeth formed on one of said first arm and said first engagement mechanism, and a pawl formed on the other of said first arm and said first engagement mechanism, said pawl biased into engagement with said teeth.

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Preferably said support system further comprises at least one second engagement mechanism integrally formed with said structure; and,

5 a second arm for each of said second engagement mechanisms, each second arm having a proximal end engaged in a respective second engagement mechanism and an opposite distal end configured to abut said support.

10 Preferably said distal end of said second arms is disposed below a position where said first arm hooks over said support.

Preferably each second arm is adjustably engaged by a
15 respective second engagement mechanism whereby said distal end of each second arm can be positioned at one of a plurality of distances from said structure.

Preferably said support system further comprises a second
20 releasable locking mechanism which releasably locks said distal end of each of said second arms at one of said plurality of distances from said structure.

In one embodiment said structure comprises a receptacle.
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Preferably said receptacle comprises a base and a peripheral structure extending from said base and having an upper end defining an opening into which said articles can be placed into said receptacle; said first engagement
30 structures formed integrally at said upper end of the peripheral wall, and said second engagement structures formed integrally with said receptacle adjacent said base.

In an alternate embodiment said structure comprises a
35 planar surface.

In a further alternate embodiment said structure comprises a substantially planar frame. In this embodiment said planar frame further comprises one or more cords or lines extending between opposite sides of said frame.

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Preferably said structure comprises two of said first engagement mechanisms and two of said second engagement mechanisms.

- 10 Throughout this specification, except where the context requires otherwise due to express language or necessary implication, the word "comprise" or variations such as "comprises" or "comprising" is used in an inclusive sense, i.e. to specify the presence of the stated features but
15 not to preclude the presence or addition of further features in various embodiments of the invention.

Brief Description Of The Drawings

- 20 An embodiment of the present invention, taking the form of a window box, will now be described by way of example only with reference to the accompanying drawings in which:

Figure 1 is a schematic representation of a window box in
25 accordance with the present invention;

Figure 2 is a schematic representation of a side view of the window box;

- 30 Figures 3 and 4 depict a window box coupled to different forms of support structures;

Figure 5 is a side view of the window box shown in Figure 1; and,

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Figure 6 depicts a freestanding window box.

Detailed Description Of Preferred Embodiment

Referring to the accompanying drawings and in particular, Figures 1 and 2, a support system in the form of a window box 10 in accordance with the present invention comprises a structure, taking the form of a receptacle 12, for holding one or more articles, such as pot plants (not shown); at least one (in this instance two) first engagement mechanisms in the form of rectangular sleeves 14 integrally formed with the receptacle 12; and, a first arm 16 for each of the sleeves 14. Each arm 16 has a proximal end 18 engaged in a respective sleeve 14 and an opposite distal end 20 shaped to hook over a support 22 whereby the window box 10 is supported on the support 22 by hooking the distal end 20 of the arm 16 over the support 22.

Each of the arms 16 is in the shape of an uppercase letter L comprising a relatively long portion 24 and a relatively short portion 26. The proximal end 18 is formed at the end of the long portion 24 distant to the short portion 26. The distal end 20 comprises the short portion 26 together with an adjacent part of the long portion 24 to define a hook like structure for hooking over the support 22.

The arms 16 are adjustably engaged by respective sleeves 14 so that the distal end 20 of each arm 16 can be positioned at one of a plurality of distances from the receptacle 12. Moreover, the window box comprises a releasable locking mechanism 28 for releasably locking the distal end 20 of each arm 16 at one of the aforementioned plurality of distances from the receptacle 12.

The releasable locking mechanism in this embodiment is in the form of a pawl and ratchet structure where ratchet teeth 30 are formed along an edge of long portion 24 of

the arm 16 on a side distance the short portion 26; and, a pawl 32 is coupled with each sleeve 14. The pawl 32 is in the form of a finger or plate which is coupled by a pivot pin 34 within a corresponding sleeve 14 and is biased, 5 either by gravity or by a bias mechanism such as a spring, into engagement with the teeth 30 and the edge of the arm 16 containing the teeth 30. The teeth 30 and pawl 32 are arranged so that when mutually engaged, they prevent distal end 20 from being pulled away from the receptacle 10 12. In order to pull the distal end 20 away from the receptacle 12, the pawl 32 must be disengaged from the teeth 30, by pivoting about pin 34 against its bias.

The window box 10 further comprises second engagement 15 mechanisms also in the form of sleeves 36 and corresponding second arms 38 for each of the sleeves 36. Each arm 38 has a proximal end 40 which is engaged in a sleeve 36 and a distal end 42 for abutting the support structure 22. The arms 38 are straight although the 20 distal end 42 may be provided with a cutout 44 for seating a transverse stabilising bar 46. Whether or not the cutout 44 and stabilising bar 46 are required is dependant on the form of the structure 22 on which the window box 10 is to be supported. This will be discussed in greater 25 detail below.

A releasable locking mechanism 28' identical to that used in relation to the first arm 16 is incorporated for releasably locking the distal end 42 of each arm 38 at one 30 of a plurality of distances from the receptacle 12. The mechanism 28' comprises a series of teeth 30' formed along one edge of the arm 38 together with a pawl 32' pivotally coupled by pin 34' to the sleeve 36 and biased so as to engage the teeth 32' and the edge of the arm 38 provided 35 with the teeth 30'. The pawl 28' is biased, for example by gravity or a bias mechanism such as a spring, to ordinarily engage the teeth 30' to prevent the distal end

42 from being pushed in toward the receptacle 12 while engaged.

As seen most clearly from Figure 1, the receptacle 12
5 comprises a base 48 and a peripheral wall 50 extending
upwardly from the base 48 and having an upper end 52
defining an opening 54 into which articles, eg. pot
plants, can be placed into the receptacle 12 to be
supported on the base. The peripheral wall 50 is
10 constituted by parallel front and back walls 56 and 58 and
parallel side walls 60 and 62 which extend between the
front and back walls 56 and 58. The sleeves 14 for the
arms 16 are formed integrally with the receptacle 12 and
the upper end 52 while the sleeves 36 are formed
15 integrally with the base 48. The sleeves 36 are disposed
below the sleeves 14 and in this embodiment are in-board
of the sleeves 14.

In use, the arms 16 are extended as necessary by
20 disengagement of the pawl 32 and teeth 30 to hook over the
support 22 thereby engaging the box 10 with the support
22. The arms 38 are extended from their respective
sleeves 36 by disengagement of the pawl 32' with the teeth
30' to a position to hold the receptacle 12 in a
25 substantially vertical plane. It will be appreciated that
the window box 10 can be attached to a support 22 such as
a window sill without the need for mechanical fasteners
and tools such as screwdrivers, drills, hammers etc.
Further, the structure of the arms 16 and 38 and their
30 respective sleeves 14 and 36 allows easy adjustment of the
box 10 for engagement with supports of different shape and
configuration while maintaining the box 10 in a vertical
disposition. Ideally, the box 10 inclusive of the arms 16
and 38 will be made from plastics material with the
35 receptacle 12 and the sleeves 14 and 36 being integrally
formed.

In Figures 1 and 5, the box 10 is supported by a restrainer or support bar 64 which extends within a window frame 66. A specific restraining or support bar which may be used in connection with the window box 10 is described
5 in Applicants co-pending Australian Provisional Application number, the contents of which is incorporated herein by way of reference. Also in the embodiment in Figure 1, the arms 38 formed with a square distal end 42 for abutment against a wall 68 in which the
10 window frame 66 is formed.

In Figure 3, the window box 10 is depicted being coupled to a fence 70. Here the distal end 42 of arm 38 is also formed square and abuts directly against the fence 70.

15 In Figure 4, the window box 10 is shown supported on a balustrade or vertical bar fence 72 which comprises a plurality of spaced apart vertically extending rails 74. In this embodiment, the distal end 42 of the arm 38 is in
20 the form depicted in Figure 2 and incorporates the cutout 44 receiving the bar or tie rod 46 which abuts against the rails 74. Opposite ends of the bar or tie rod 46 are received in the cutouts 44 of each of the arms 38.

25 Figure 6 depicts the receptacle 12 being freestanding with support legs 76 being received in the sleeves 36 so that the receptacle 12 may be used as a conventional planter box.

30 Now that embodiments of the present invention have been described in detail it will be apparent to those skilled in the relevant arts that numerous modifications and variations may be made without departing from the basic inventive concepts. For example, the window box 10 is
35 depicted as being provided with two spaced apart sleeves 14 and corresponding arms 16. However, embodiments are envisaged comprising only a single sleeve 14 and arm 16

located centrally of the receptacle 12. Alternately, three or more sleeves 14 and corresponding arms 16 may be incorporated. Further, the window box 10 may be provided with a single centrally located sleeve 36 and

5 corresponding arm 38. In addition, the releasable locking mechanism 28 need not be in the form of ratchet teeth 30, 30' and a pawl 32, 32'. Other types of releasable locking mechanisms such as pins and holes may be incorporated.

Further, while the support system is described as
10 comprising a window box, with the structure itself in the form of a box *per se*, it may take many other forms. In particular the structure can take the form of or comprise a planar surface to provide a table; or a planar frame with one or more cords or lines extending from side to
15 side to provide a clothes line.

All such modifications and variations together with others that would be obvious to a person of ordinary skill in the art are deemed to be within the scope of the present
20 invention the nature of which is to be determined from the above description.